

**HUMAN DIMENSIONS IN WILDLIFE MANAGEMENT EDUCATION:  
PRE-SERVICE OPPORTUNITIES AND IN-SERVICE NEEDS**

by

Larry M. Gigliotti and Daniel J. Decker

COPY



**HDRU Series No. 90-9**

**October 1990**



Human Dimensions Research Unit  
Department of Natural Resources  
New York State College of Agriculture and Life Sciences  
A Statutory College of the State University  
Cornell University, Ithaca, N. Y.



## HUMAN DIMENSIONS RESEARCH UNIT PUBLICATIONS SERIES

This publication is part of a series of reports resulting from investigations dealing with public issues in the management of wildlife, fish, and other natural resources.<sup>1</sup> The Human Dimensions Research Unit (HDRU) in the Department of Natural Resources at Cornell University is a nationally-recognized leader in the study of the economic and social values of wildlife, fish, and other natural resources and the application of such information in management planning and policy. A list of HDRU publications may be obtained by writing to the Human Dimensions Research Unit, Department of Natural Resources, Fernow Hall, Cornell University, Ithaca, NY 14853.

<sup>1</sup>This final report is a carryover from the 1988-89 studies (Project W-146-R-14) under the old job number and title: IX-5 "Utilization of Social Values Information in Wildlife Management Curricula in Colleges and Universities." This report was submitted for publication to the *Wildlife Society Bulletin*.

**HUMAN DIMENSIONS IN WILDLIFE MANAGEMENT EDUCATION:  
PRE-SERVICE OPPORTUNITIES AND IN-SERVICE NEEDS**

**by**

**Larry M. Gigliotti and Daniel J. Decker**

**HDRU Series No. 90-9**

**October 1990**

**FINAL REPORT**

STATE: NEW YORK  
PROJECT: W-146-R-14

PROJECT TITLE: Public Attitudes Toward Wildlife and Its Accessibility

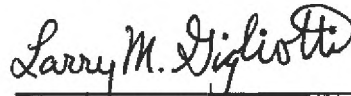
STUDY NUMBER AND TITLE: IX - Enhancing Public Benefits From Wildlife  
Management Through Education and  
Communication

JOB NUMBER AND TITLE: IX-5 - Utilization of Social Values Information in  
Wildlife Management Curricula in Colleges  
and Universities

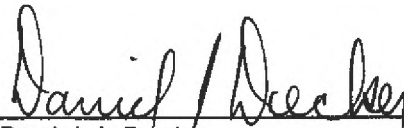
JOB OBJECTIVES: (1) To identify wildlife management curricula that utilize social values  
information.  
(2) To identify the ways that wildlife management curricula utilize  
social values information.

JOB DURATION: 1 July 1988 - 30 June 1989

PREPARED BY:



Larry M. Gigliotti  
Research Associate  
Department of Natural Resources  
Cornell University



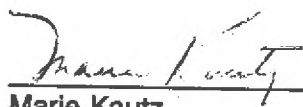
Daniel J. Decker  
Assistant Professor  
Department of Natural Resources  
Cornell University

APPROVED BY:

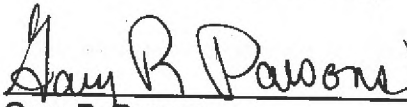


George F. Mattfeld  
Supervising Wildlife Biologist  
Bureau of Wildlife (NYSDEC)





Marie Kautz  
P-R Coordinator  
Bureau of Wildlife (NYSDEC)



Gary R. Parsons  
Chief Wildlife Biologist  
Bureau of Wildlife (NYSDEC)

## ACKNOWLEDGMENTS

We express our appreciation to the New York State Department of Environmental Conservation, Bureau of Wildlife staff for their participation in this study, particularly G. F. Mattfeld and G. R. Parsons, and we are grateful to the wildlife professors across the U.S. who assisted us in this study. We also thank T. L. Brown, J. W. Enck, N. A. Connelly, R. E. Shanks, W. F. Siemer, and R. J. Stout for their thoughtful review of this report; staff of the Human Dimensions Research Unit for assistance in conducting the study; and M. A. Peech for word-processing support. Funding for this study was provided by New York State through Federal Aid Wildlife Restoration Project W-146-R.

## TABLE OF CONTENTS

	<u>Page</u>
ACKNOWLEDGMENTS .....	i
TABLE OF CONTENTS .....	ii
LIST OF TABLES .....	iii
METHODS .....	3
Definition of Human Dimensions .....	5
Data Analysis .....	5
RESULTS .....	6
Survey Response Rates .....	6
Survey of Bureau of Wildlife Employees .....	6
Survey of Colleges and Universities .....	11
DISCUSSION .....	13
SUMMARY AND CONCLUSIONS .....	16
LITERATURE CITED .....	18
APPENDIX A: Questionnaire used to identify the human dimensions training and perceived training needs of Bureau of Wildlife staff, 1990 .....	21
APPENDIX B: Questionnaire used to identify the opportunities for human dimensions education available to wildlife students at colleges and universities in the U.S., 1990 .....	26
APPENDIX C: Selected comments by NYSDEC Bureau of Wildlife staff on a questionnaire to identify their human dimensions training level and perceived training needs, 1990 .....	29

## LIST OF TABLES

	<u>Page</u>
Table 1. Human dimensions-related topics covered in wildlife management courses reported by the New York State Department of Environmental Conservation, Bureau of Wildlife employees, 1990 . . . . .	8
Table 2. New York State Department of Environmental Conservation, Bureau of Wildlife, employee recommendations on how the Bureau can better apply human dimensions knowledge in wildlife management efforts . . . .	10
Table 3. Percent of human dimensions content in wildlife management courses reported by wildlife management professors in U.S. colleges and universities as having some human dimensions content, 1990 . . . . .	12

## **HUMAN DIMENSIONS IN WILDLIFE MANAGEMENT EDUCATION: PRE-SERVICE OPPORTUNITIES AND IN-SERVICE NEEDS**

Among the important developments in the wildlife management field during the last 2 decades was the emergence of the human dimensions subdiscipline (Doig 1987, Decker et al. 1989). This area of interest grew out of a concern among some wildlife professionals over how people's values affect and are affected by decisions about the management of wildlife populations, habitat, and use of these resources (Purdy and Decker 1989). A variety of people-oriented considerations and a broad area of related inquiry come under the rubric of human dimensions in wildlife management (Decker et al. 1989). Typically, human dimensions research and management interests have focused on beliefs, values, attitudes, behaviors, and socioeconomic and demographic characteristics of wildlife user groups and other management stakeholders, with emphasis placed on incorporating such information into the overall wildlife management scheme.

Human dimensions research began during the 1960's and increased steadily through the 1970's and 1980's (Manfredo 1989). The importance of the human dimensions in wildlife management is now well recognized (Decker et al. 1987, Duda et al. 1989). The necessity of obtaining and applying human dimensions information in management is largely the result of increasing human demands on wildlife resources by a growing number user groups (Lyons 1987). In addition, an expanding human population and greater suburban-rural fringe development have caused more frequent incidences of negative human-wildlife contacts, resulting in new human dimensions information needs (Connelly et al. 1987, Julian 1987, Decker 1987, Conover 1987). In the contemporary sociopolitical context of wildlife management, managers are finding human dimensions information increasingly valuable as they try to identify and understand the desires and concerns of today's more diverse



stakeholders in wildlife management, which differ considerably from the traditional wildlife user groups (e.g., hunters and trappers) most familiar to managers.

The contributions of the human dimensions subdiscipline are limited by the extent to which human dimensions information is integrated into wildlife management decision making (Berryman 1987). Facilitating and overcoming barriers to such integration has become an interest among many human dimensions specialists and wildlife agency administrators (Shanks 1990). Decker et al. (1987) discussed 3 general impediments to the integration of human dimensions information in wildlife management: (1) traditionally in wildlife management, biological considerations have been the primary determinants of management decisions, (2) a communications gap exists between many wildlife professionals with traditional biological training and those dealing with the human dimensions aspects of management, and (3) the image of human dimensions as a legitimate body of knowledge among some wildlife managers needs improvement. Among the ways to reduce these impediments and increase the integration of human dimensions information into wildlife management would be to include human dimensions as part of the pre-service education and in-service training of wildlife biologists and managers who work for public wildlife agencies. For example, the Responsive Management Project, designed to improve the integration of human dimensions into wildlife management (Shanks 1990), recognizes the need for special in-service training of biologists and managers. It is likely that adoption of the Responsive Management Project will depend to a large degree on reducing some of the impediments mentioned above.

Because the human dimensions subdiscipline is relatively new, it is unlikely that most wildlife agency staff would have had an opportunity for formal training in human dimensions. Wildlife agencies that want to accelerate integration of human dimensions information into

management will find this to be a problem. In some cases, the availability of research results may not be utilized fully because of staff ability to work with such information. The New York Department of Environmental Conservation, Bureau of Wildlife (BOW) has made a great effort to apply human dimensions information effectively in their management programs, and is concerned about improving staff ability to interpret and use such information. The purpose of this study was to identify (1) needs of current agency staff for in-service education in human dimensions and (2) opportunities that exist for pre-service education in human dimensions for aspiring wildlife professionals.

## **METHODS**

Two surveys were designed to determine (a) the nature of human dimensions training needs among current New York BOW staff (administrators, managers, biologists and technicians) and (b) the availability of human dimensions education for wildlife majors in colleges and universities across the U.S. New York may be a unique case study because of 15 years of continuous collaboration (Federal Aid in Wildlife Restoration Project W-146-R) with the Human Dimensions Research Unit in the Department of Natural Resources at Cornell University. Over that period dozens of regional and central office staff and administrators in BOW have been involved in human dimensions research with the unit at Cornell. This close working relationship may have increased and focused the agency staff's perceptions of the value of human dimensions information in wildlife management, representing an example of one of the best-case situations in the U.S. vis-à-vis integration of human dimensions in wildlife management.

The first survey was designed to identify the human dimensions training level and perceived human dimensions training needs of BOW employees (Appendix A). We sent a 4-page, self-administered, mail-back questionnaire to all 171 administrators, managers,

biologists, and technicians in the New York BOW on 22 May 1990. A reminder mailing was made on 1 June 1990 by the chief of the New York BOW asking for staff cooperation in the survey. A second mailing of the questionnaire was sent to nonrespondents on 15 June 1990. The questionnaire sought information on educational attainment, extent of human dimensions education received in college, extent of in-service human dimensions training, perceived importance of human dimensions knowledge for one's job, desire for further in-service human dimensions training, human dimensions-related work one does, and recommendations for how the agency could improve application of human dimensions knowledge in wildlife management efforts.

The second survey was designed to identify the opportunities for human dimensions education available to wildlife students at colleges and universities in the U.S (Appendix B). We sent a 2-page, self-administered, mail-back questionnaire to each of the 88 colleges and universities identified by The Wildlife Society (TWS) as offering wildlife courses (The Wildlife Society 1989). The questionnaire was directed at professors who teach basic wildlife management courses. These professors were asked to identify human dimensions courses available to their wildlife students, if any, and the amount of human dimensions coverage in their own wildlife management courses. The first mailing of the questionnaire was 4 May 1990. A second mailing to nonrespondents was sent on 25 May 1990. These 2 mailings were sent to the appropriate Department chairperson asking that the questionnaire be transmitted to the primary wildlife management teaching professor. A third mailing of the questionnaire was sent on 13 June 1990 directly to wildlife management professors after obtaining nonrespondents' names and addresses.

The questionnaire sought information on whether the wildlife management professor knew if a human dimensions course was available in their department or outside their

department, and if available, the percent of recent wildlife graduates who took the course, the professors' perception of the extent coverage of human dimensions within the curriculum required of wildlife students, and the extent of human dimensions coverage in their wildlife management courses. We requested that syllabi of all wildlife courses with human dimensions content be returned with the questionnaire.

### **Definition of Human Dimensions**

The following definition of human dimensions was used with the survey of BOW staff:

Human dimensions is an area that deals with the people aspects of natural resources management. Typically, human dimensions relates to beliefs, values, attitudes, behaviors, and socioeconomic and demographic characteristics of user groups or publics and how these people aspects are incorporated into the overall management scheme.

As a field, human dimensions blends such specialties as sociology, psychology, communications, economics, recreation, education, anthropology and other subjects to identify principles of human behavior concerning natural resources use. Furthermore, human dimensions promotes the integration of the social sciences with biology and ecology to maximize the human benefits from the management of renewable natural resources.

Human dimensions is different from the social sciences in that principles of human behavior are applied to natural resources issues, i.e., is more applied.

We did not define "human dimensions" in the survey of colleges and universities to allow wildlife management professors to respond according to their own definition of human dimensions, which was of interest to us.

### **Data Analysis**

Analysis of data from these surveys was conducted using the SPSSX statistical package (SPSS, Inc. 1986). Statistical comparisons were made using Chi-square tests at the  $P \leq 0.05$  level of significance.

## RESULTS

### Survey Response Rates

Usable questionnaires were returned from 162 (95%) of the 171 New York BOW employees. From a sample size of 88, 79 (90%) usable questionnaires were returned from the colleges and universities. The Wildlife Society list had 3 categories for type of wildlife program offered by the colleges and universities: (1) a named degree in wildlife, (2) a wildlife option with degree in another field, and (3) no degree in wildlife but offers wildlife courses. The list also indicated whether the institution requires all courses necessary to meet the educational requirements for certification by TWS or offers, but does not require all courses necessary for certification. Respondent and nonrespondent colleges and universities were similar in the type of wildlife degrees offered at the B.S. ( $X^2 = 1.05$ ; 3 df;  $P = 0.789$ ), M.S. ( $X^2 = 3.62$ ; 3 df;  $P = 0.306$ ), and Ph.D. ( $X^2 = 3.45$ ; 3 df;  $P = 0.327$ ) levels and whether wildlife certification courses were required or not ( $X^2 = 0.33$ ; 2 df;  $P = 0.849$ ). Nonresponse bias is not considered a problem for either of the surveys.

### Survey of Bureau of Wildlife Employees

The census of BOW staff represented a cross-section of wildlife positions typical of the profession. Among the respondents were 7 (4.3%) administrators, 20 (12.3%) managers, 79 (48.8%) biologists and 56 (34.6%) technicians. Most respondents had regional (71.6%) rather than statewide (28.4%) responsibilities. Seven (4.3%) listed no college degree, 30 (18.6%) listed an associate degree, 74 (46.0%) listed a B.S./B.A. degree, 45 (28.0%) listed a M.S. degree, and 5 (3.1%) listed a Ph.D. degree as their highest degree received. Most (47%) BOW staff received their highest degree during the 1970's (1971-80) and about 20% received their highest degree during the 1980's (1981-90). The majority of BOW staff with a B.S. or higher degree received one or more of their degrees from one of the 88 colleges or



universities in our survey. BOW staff reported the highest number of degrees from State University of New York - College of Environmental Science and Forestry (46, 33.8%), followed by Cornell University (32, 23.5%).

Few (11.6%) BOW staff reported taking a human dimensions course in college, typically as an undergraduate. About half (50.6%) reported that human dimensions topics were covered in their wildlife management courses. Topics listed most often as representing human dimensions content in wildlife management courses were special topics (69.1%), importance of human dimensions in wildlife management (59.3%), and communications techniques -- how to deal with the public (53.1%) (Table 1). Most BOW staff (73.5%) rated their college education as less than adequate in terms of human dimensions education/training for their career whereas 23.9% felt it was adequate and 2.6% more than adequate. Surprisingly, BOW staff who had taken a human dimensions course rated the adequacy of their human dimensions education/training similar to those who had not taken a such a course ( $\chi^2 = 0.73$ ; 2 df;  $P = 0.695$ ). Some (18.8%) BOW employees reported special human dimensions education/training other than in a college degree program, such as workshops or seminars.

Human dimensions training was considered important to most wildlife staff in their present position in the BOW; 28.1% rated human dimensions training as essential, 37.5% as very important, 20.6% as moderately important, 6.9% as slightly important and 6.9% as not important. People who had taken a human dimensions course tended to rate human dimensions education/training as essential for their job compared to those who had not taken such a course (50% vs. 24%). Similarly, BOW staff who had post-college human dimensions education/training were significantly more likely to rate human dimensions education/training as essential for their job compared to those without such special education/training (50% vs. 23%).

Table 1. Human dimensions-related topics covered in wildlife management courses reported by the New York State Department of Environmental Conservation, Bureau of Wildlife employees, 1990.			
TOPICS:	Number Responses	Percent Responses	Percent Cases <sup>a</sup>
SPECIAL TOPICS (e.g., violators, hunting philosophy).	56	28.4	69.1
IMPORTANCE OF HUMAN DIMENSIONS IN WILDLIFE MANAGEMENT.	48	24.4	59.3
COMMUNICATION TECHNIQUES--HOW TO DEAL WITH THE PUBLIC.	43	21.8	53.1
RESEARCH FINDINGS OR PRINCIPLES OF HUMAN DIMENSIONS.	18	9.1	22.2
PUBLIC PARTICIPATION TECHNIQUES.	12	6.1	14.8
HOW TO COLLECT HUMAN DIMENSIONS DATA.	9	4.6	11.1
HOW TO ANALYZE HUMAN DIMENSIONS DATA.	6	3.1	7.4
HOW TO INTERPRET HUMAN DIMENSIONS DATA.	5	2.5	6.2
TOTAL	197	100.0	
<sup>a</sup> Based on 81 valid cases.			

Most BOW staff believed they needed additional education/training in human dimensions for their current work (67.5%) and the work they hope to do later in their career (66.0%). Special workshops on human dimensions were of greatest interest to BOW staff (69.5% were very interested). Interest in a manual or textbook on human dimensions for self study was common (41.6% were very interested). Similarly, some interest was expressed in an opportunity to attend a college or university class on human dimensions (20.2% were very interested). Some editorial comments and suggestions by BOW staff are listed in Appendix C.

The high importance ratings BOW staff gave to human dimensions are not surprising considering their analysis of the work they do related to human dimensions. Most BOW staff (90.0%) reported that their work required an understanding of publics' concerns, needs or desires; 84.4% reported frequent contact with the public; 74.4% were involved in implementation of programs that required contact with the public; 46.2% reported conducting public meetings; and 29.4% were involved in establishing public policy. All of these responsibilities could benefit from knowledge of human beliefs, attitudes, values and behaviors regarding wildlife and their management.

Most (82.1%) BOW staff suggested that the Bureau should do more to provide human dimensions training for the staff (Table 2). A majority (59.3%) of the wildlife staff would like the Bureau to do more to encourage the colleges and universities to train wildlife managers in human dimensions (Table 2). Although about one-half of the staff (51.7%) recommended that the Bureau should keep the same level of effort when evaluating human dimensions abilities/skills for promotions or work assignments, one-third (32.2%) recommended doing more (Table 2). Many BOW staff (44.2%) recommended doing more to develop teams of staff with human dimensions expertise (Table 2). Contracting with outside human dimensions experts, either on a case-by-case basis or a consultant/retainer basis, were the least attractive options to BOW employees as a group (Table 2). Some additional recommendations by BOW staff are reported in Appendix C.

In the wording on one of the recommendations for BOW staff to evaluate, "Provide human dimensions education for biologists and managerial staff (e.g., workshops, seminars, special classes)", technicians were inadvertently omitted. Eleven respondents (8 technicians and 3 biologists) made special comments that technicians also need human dimensions education/training. This emphasizes the perceived importance of human dimensions to agency staff in a variety of roles.

Table 2. New York State Department of Environmental Conservation, Bureau of Wildlife, employee recommendations on how the Bureau can better apply human dimensions knowledge in wildlife management efforts.

Recommendations	<u>Do More</u> n %	<u>Same Level</u> n %	<u>Do Less</u> n %	<u>Do Not</u> <u>Recommend</u> n %	<u>Total</u> n %
Provide human dimensions education for biologists and managerial staff (e.g., workshops, seminars, special classes)	124 82.1	22 14.6	2 1.3	3 2.0	151 100.0
Stress human dimensions education in the hiring of new biologists and managerial staff (i.e., the agency should encourage the colleges and universities to train the wildlife managers).	89 59.3	50 33.3	1 0.7	10 6.7	150 100.0
Have teams of staff with developed human dimensions expertise.	65 44.2	49 33.3	5 3.4	28 19.1	147 100.0
Formally evaluate human dimensions abilities/skills for promotions or work assignments.	48 32.2	77 51.7	1 0.7	23 15.4	149 100.0
Contract with outside human dimensions experts to provide input on a case-by-case basis.	35 24.0	66 45.2	10 6.8	35 24.0	146 100.0
Apply human dimensions experts on a consultant/retainer basis.	33 22.9	55 38.2	11 7.6	45 31.3	144 100.0

### Survey of Colleges and Universities

Human dimensions courses were available to wildlife students in 22 (27.8%) of the colleges/universities from which wildlife professors responded. Twenty-one professors reported a human dimensions course in their department and 2 reported a course available elsewhere (1 reported human dimensions courses both in and outside their department). Most professors (18, 81.8%) reported only 1 human dimensions course. No significant relationship was found between requirement of TWS certification courses and the availability of human dimensions courses at the colleges/universities ( $\chi^2 = 2.67$ ; 2 df;  $P = 0.263$ ). Only 3 (3.4%) of the 88 colleges and universities in our study did not offer all the courses required for certification by TWS; 52 (59.1%) offered all the courses but did not require them for graduation and 33 (37.5%) required all the courses for graduation.

The professors who indicated that a human dimensions course was available to their students were asked to estimate the percent of their graduates over the last 3 years (i.e., 1987-88, 1988-89 and 1989-90) who took that human dimensions course. Sixteen professors estimated that most of their recent wildlife undergraduates took a human dimensions course (median value = 82.5%); 7 of these professors reported 100% of their undergraduates taking their human dimensions course because it was required. Wildlife graduate students were less likely to have taken a human dimensions course at the graduate level (median value = 20.0%). Professors from the few colleges and universities that offered a human dimensions course but did not give an estimate of percent of recent graduates made the point that their human dimensions course was too recent to have had any graduates.

About 90% (n=71) of the professors reported that human dimensions were covered through courses within the curriculum required of wildlife students (e.g., sociology, psychology, economics, policy, communications, etc.). About 78% (n=61) reported that



human dimensions topics were covered in the wildlife management courses themselves. Ninety-nine wildlife courses were listed by the wildlife professors as including human dimensions topics with an overall mean of 20.4% human dimensions content, although the range was large (Table 3). Human dimensions topics covered in wildlife management courses were diverse, including: history of conservation, politics, economics, decision-making, wildlife values, attitudes towards wildlife, values conflict, communication, law enforcement, policy, planning, administration, human survey techniques, expectations of managers, sociology of hunting, anti-hunting, animal rights, public access, and the human aspects of setting harvest regulations.

**Table 3.** Percent of human dimensions content in wildlife management courses reported by wildlife management professors in U.S. colleges and universities as having some human dimensions content, 1990.

HUMAN DIMENSIONS CONTENT	NUMBER OF COURSES	PERCENT OF COURSES
1 - 9%	22	22.2
10 - 19%	33	33.3
20 - 29%	22	22.2
30 - 39%	7	7.1
40 - 49%	4	4.0
50 - 59%	5	5.1
60 - 69%	3	3.0
70+%	3	3.0
TOTAL	99	99.9

## DISCUSSION

Most BOW staff considered human dimensions education/training important for their job. However, only about 12% of BOW staff had taken a human dimensions course and about 19% had attended in-service human dimensions workshops or seminars (2.5% of the staff had taken both pre-service and in-service human dimensions training). Also, about two-thirds of BOW staff expressed a desire for additional human dimensions education/training. These findings indicate that the Bureau will need more in-service training of staff to meet their goal of increasing the utilization of human dimensions information in wildlife management. A recent study (Shanks and Decker 1990) of wildlife professionals, about half of whom were New York State Department of Environmental Conservation staff, reported that 95% of the wildlife professionals thought communicating with the public, which is one of the primary functions for application of human dimensions information, was a moderate to very important part of their job, further emphasizing the importance of human dimensions to the wildlife profession.

If the New York BOW is typical of wildlife agencies in other states, and we believe it may actually be more attuned to human dimensions application than many state wildlife agencies, then a great need exists for in-service human dimensions training to take full advantage of the knowledge base emerging from this relatively recent subdiscipline in wildlife management. As in the case of the New York BOW, it is likely that a substantial number of wildlife staff in agencies nationwide received their degree(s) before human dimensions information was available at colleges and universities. In-service human dimensions training would be a relatively easy task for the New York BOW because a significant portion of the staff expressed a need for such training.

The New York BOW is also interested in the pre-service human dimensions educational opportunities for future wildlife managers. Considering the importance of human dimensions skills for wildlife managers it seems reasonable to expect that human dimensions should be included as part of the pre-service education of wildlife managers. This study found that 22 of 79 wildlife professors who responded reported availability of a human dimensions course for wildlife majors. However, with many wildlife managers and other agency staff recognizing the importance of human dimensions training for their jobs, and with the increasing visibility of human dimensions research in the wildlife literature, more departments with wildlife course curricula at colleges and universities across the U.S. will likely respond to this need. An agency can accelerate this process by making it known that it is interested in wildlife majors having education in human dimensions. For the case of the New York BOW, contact with 2 instate universities would affect nearly 60% of their future staff, if recent hiring trends remain constant.

One possible impediment for colleges and universities to add a human dimensions course to their wildlife curricula may be the belief that human dimensions is covered within the existing curricula required of wildlife students (e.g., sociology, psychology, economics, policy, communications, etc.). About 90% of the professors believed that human dimensions were covered by such courses. Although these courses improve understanding of some aspects of human behavior, they are typically located outside the natural resources departments and serve a broad range of disciplines, therefore they are not likely to focus on natural resources issues. Also, students may not be able to make the connections between basic principles and what to do in actual wildlife management situations. For example, a BOW employee who had not taken a human dimensions course lamented that the psychology, sociology of education, and education psychology and human development

courses he/she took did not fit our definition as human dimensions. This person wrote in the following statement: "Collegiate human dimensions programs currently suffer from insularity; lack of real world contact. I would be very interested in reality-based human dimensions information." This statement reflects the frustration that many wildlife managers may have with applying their basic social science courses to on-the-job human dimensions issues. One objective of a human dimensions course should be to show how human behavior theories can be applied to natural resources issues.

At present, human dimensions education for wildlife majors is highly variable among institutions. Human dimensions courses are not available at all colleges and universities where wildlife degrees or options are available, and not all wildlife majors necessarily take a human dimensions course even if it is available. Consequently, if human dimensions is considered important to work effectively as a wildlife professional, agencies need to specify human dimensions education/training when hiring for new positions having responsibilities that would need such abilities.

Some wildlife professors integrate human dimensions into their regular wildlife courses. Indeed it appears that human dimensions topics are covered in many wildlife and natural resources management courses. In this study, wildlife professors listed 99 courses which had varying amounts of human dimensions coverage with an overall estimated mean of 20% of the course devoted to human dimensions topics. However, this coverage may not adequately substitute for a specific course with a human dimensions focus, particularly considering that topic areas listed by the wildlife professors ranged widely.

## SUMMARY AND CONCLUSIONS

Human dimensions education/training was perceived as very important by the New York BOW staff. This view is likely to be representative of the wildlife profession. In-service training in human dimensions will likely be necessary for an agency's immediate needs. However, opportunities for pre-service education in human dimensions does not seem to be adequate. Few colleges and universities offer a human dimensions course.

One way to increase opportunities for pre-service education in human dimensions would be to include human dimensions as part of the educational requirements for certification by TWS. This would be a major incentive for increasing the availability of human dimensions. An objection to this recommendation might be that a human dimensions course would be added at the expense of a biology, ecology or technical methods course. TWS certification education requirements leave little room for electives (The Wildlife Society 1989). It may be time to realize that 2 major career pathways exist in the wildlife profession—biologist and manager. The latter has immediate need for in-depth human dimensions knowledge for effective performance.

A long-standing philosophical split has existed regarding whether higher education should produce generalists or specialists. Yambert and Donow (1986:13) pointed out that, "fields of knowledge have grown so complex that no one can master more than a few of them." To advance in the many fields we will need increasingly specialized experts. For example, further advances in wildlife genetics will require people with highly specialized training in this field. On the other hand, environmental policy and management cuts across many fields and requires generalists who understand the language and basic concepts of these fields. Schenker (1972) points out that the key is to have the various disciplines work together effectively to solve complex environmental problems. Colleges and universities



educating future wildlife professionals need to reflect this reality and develop programs to produce specialists and generalists. TWS can influence this action by developing 2 different sets of certification requirements.

A wildlife manager (generalist) requires more than understanding the biological and ecological concepts of wildlife management. Managers not only must be able to integrate these biological and ecological principles to make wise management decisions but also need to understand how to measure and evaluate socioeconomic, cultural, and political elements of the management environment (Krueger et al. 1986). To develop these skills, managers need specialized training on how to integrate the various disciplines necessary to manage natural resources effectively for the public benefit. Thus, a wildlife manager requires a different set of specialized training than does a biologist. We labeled managers as generalists only because their specialized training needs are integrative across disciplines, but no less rigorous than the highly focused training needs of a wildlife biologist.

A human dimensions course should be designed to help wildlife managers integrate the human elements with the biological factors into effective management practices. Taking a human dimensions course would not make a person a human dimensions expert. To develop such expertise would require a set of courses and experiences very different from that of a wildlife manager. Rather, a human dimensions course should give a wildlife manager a basic understanding of the human elements of wildlife issues, an ability to apply human dimensions information in management, and the ability to work with human dimensions specialists when additional information is needed. Possibly the Human Dimensions in Wildlife Study Group, the professional association of researchers, managers, and academicians with special interest in human dimensions, could develop a model

curriculum for this subject area, much as the Organization of Wildlife Planners has done for planning.

### LITERATURE CITED

- Berryman, J. H. 1987. Socioeconomic values of the wildlife resource: are we really serious? Pages 5-11 in D. J. Decker and G. R. Goff, eds. Valuing wildlife: economic and social perspectives. Westview press, Boulder, Colo.
- Connelly, N. A., D. J. Decker, and S. Wear. 1987. Public tolerance of deer in a suburban environment: implications for management and control. Pages 207-218 in Holler, ed. Proceedings of the Third Eastern Wildlife Damage Control Conference. Gulf Shores, Alabama, 18-21 October.
- Conover, M. R. 1987. The urban-suburban Canada goose: an example of short-sighted management? Pages 346-347 in Holler, ed. Proceedings of the Third Eastern Wildlife Damage Control Conference. Gulf Shores, Alabama, 18-21 October.
- Decker, D. J. 1987. Management of suburban deer: an emerging controversy. Pages 344-345 in Holler, ed. Proceedings of the Third Eastern Wildlife Damage Control Conference. Gulf Shores, Alabama, 18-21 October.
- \_\_\_\_\_, T. L. Brown, and G. F. Mattfeld. 1987. Integrating social science into resource management: barriers and limitations. Pages 83-92 in M. L. Miller, R. P. Gale, and P. J. Brown, eds. Social science in natural resource management systems. Westview press, Boulder, Colo.
- \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_. 1989. The future of human dimensions of wildlife management: can we fulfill the promise? Trans. North Am. Wildl. and Nat. Resour. Conf. 54:415-425.

- Doig, H. E. 1987. Applying wildlife values information in management planning and policy making. Pages 305-308 in D. J. Decker and G. R. Goff, eds. Valuing wildlife: economic and social perspectives. Westview press, Boulder, Colo.
- Duda, M. D., S. I. Cerulean, and J. A. Gillan. 1989. Comprehensive wildlife education planning in Florida: the value of human dimensions research. Trans. North Am. Wildl. and Nat. Resour. Conf. 54:455-467.
- Krueger, C. C., D. J. Decker, and T. A. Gavin. 1986. A concept of natural resource management: an application to unicorns. Trans. Northeast Sect. Wildl. Soc. 43:50-56.
- Lyons, J. R. 1987. Basic and applied social research needs in wildlife management. Pages 285-295 in D. J. Decker and G. R. Goff, eds. Valuing wildlife: economic and social perspectives. Westview press, Boulder, Colo.
- Manfredo, M. J. 1989. Human dimensions of wildlife management. Wildl. Soc. Bull. 17(4):447-449.
- Purdy, K. G., and D. J. Decker. 1989. Applying wildlife values information in management: the wildlife attitudes and values scale. Wildl. Soc. Bull. 17(4):494-500.
- San Julian, G. J. 1987. The future of wildlife damage control in an urban environment. Pages 229-233 in Holler, ed. Proceedings of the Third Eastern Wildlife Damage Control Conference. Gulf Shores, Alabama, 18-21 October.
- Schenker, A. E. 1972. Environmental communication and local government. J. Environ. Educ. 4(2):57-60.
- Shanks, R. E. 1990. Reflections on the responsive management project. Human Dimensions in Wildlife Newsletter 9(3):4-9.

\_\_\_\_\_, and D. J. Decker. 1990. Communication and image in the wildlife profession: a New York perspective. HDRU Publ. 90-5. Dept. of Nat. Resour., N.Y.S. Coll. of Ag. and Life Sci., Cornell Univ., Ithaca, NY.

SPSS, Inc. 1986. Statistical package for the social sciences user's guide. Second ed. SPSS, Inc., Chicago, IL. 988pp.

The Wildlife Society. 1989. Universities and colleges offering curricula in wildlife conservation. Bethesda, MD. 6pp.

Yambert, P. A. and C. F. Donow. 1986. Are we ready for ecological commandments? J. Environ. Educ. 17(4):13-16.

## **APPENDIX A**

Questionnaire used to identify the human dimensions training level and perceived training needs of Bureau of Wildlife staff, 1990.

# NYS DEC BUREAU OF WILDLIFE HUMAN DIMENSIONS TRAINING SURVEY

Human dimensions is an area that deals with the people aspect of natural resources management. Typically, human dimensions relates to beliefs, values, attitudes, behaviors, and socioeconomic and demographic characteristics of user groups or publics and how these people aspects are incorporated into the overall management scheme.

As a field, human dimensions blends such specialties as sociology, psychology, communications, economics, recreation, education, anthropology and other subjects to identify principles of human behavior concerning natural resources use. Furthermore, human dimensions promotes the integration of the social sciences with biology and ecology to maximize the human benefits from the management of renewable natural resources.

Human dimensions is different from the social sciences in that principles of human behavior are applied to natural resources issues, i.e., is more applied.

---

1. What type of work do you now do in the Bureau of Wildlife and where is it located?

<u>Position (Type of Work)</u>	<u>Location</u>
<input type="checkbox"/> 1. ADMINISTRATOR	<input type="checkbox"/> A. CENTRAL OFFICE
<input type="checkbox"/> 2. MANAGER (Unit or Region)	<input type="checkbox"/> B. REGIONAL OFFICE
<input type="checkbox"/> 3. BIOLOGIST	
<input type="checkbox"/> 4. TECHNICIAN	

2. Please check (✓) the degrees you have, list the college or university where you obtained the degree, the major subject area, and the year you received the degree:

	<u>COLLEGE or UNIVERSITY</u>	<u>MAJOR SUBJECT</u>	<u>YEAR</u>
<input type="checkbox"/> 2-YR.	_____	_____	_____
<input type="checkbox"/> B.S./B.A.	_____	_____	_____
<input type="checkbox"/> M.S.	_____	_____	_____
<input type="checkbox"/> Ph.D.	_____	_____	_____

3. Was there a human dimensions in wildlife management course (as described in the definition at the top of this page) available at the college(s) or university(ies) you attended?

☐ 1. YES  
☐ 2. NO  
☐ 3. NOT SURE

4. Did you take a course in human dimensions (as described in the definition at the top of page one) while in college?

☐ 1. YES ----> COURSE TITLE: \_\_\_\_\_  
☐ 2. NO AT UNIVERSITY/COLLEGE: \_\_\_\_\_

If YES, what level were you when you took the course?

☐ 1. UNDERGRADUATE STUDENT  
☐ 2. GRADUATE STUDENT

5. Were any human dimensions topics covered in the wildlife management courses you took?

☐ 1. YES  
☐ 2. NO  
☐ 3. DIDN'T TAKE WILDLIFE MANAGEMENT COURSES  
☐ 4. DON'T REMEMBER

If YES, please check (✓) all the topics that were covered in your wildlife management courses.

☐ 1. IMPORTANCE OF HUMAN DIMENSIONS IN WILDLIFE MANAGEMENT  
☐ 2. RESEARCH FINDINGS OR PRINCIPLES OF HUMAN DIMENSIONS  
☐ 3. HOW TO COLLECT HUMAN DIMENSIONS DATA  
☐ 4. HOW TO ANALYZE HUMAN DIMENSIONS DATA  
☐ 5. HOW TO INTERPRET HUMAN DIMENSIONS DATA  
☐ 6. COMMUNICATION TECHNIQUES -- HOW TO DEAL WITH THE PUBLIC  
☐ 7. PUBLIC PARTICIPATION TECHNIQUES  
☐ 8. SPECIAL TOPICS, (e.g., violators, hunting philosophy)

6. Have you had formal human dimensions education/training (such as, workshops, seminars, etc.) other than in a college degree program?

☐ 1. YES  
☐ 2. NO

If YES, please describe the circumstances:

WHEN: \_\_\_\_\_ WHERE: \_\_\_\_\_  
FORMAT: \_\_\_\_\_  
TOPIC(S): \_\_\_\_\_  
DURATION: \_\_\_\_\_  
WHO OFFERED (ORGANIZATION): \_\_\_\_\_



7. How important do you think it is to have formal education/training in understanding concepts of human dimensions for the work you now do in the Bureau of Wildlife?

- ☐ 1. ESSENTIAL
- ☐ 2. VERY IMPORTANT
- ☐ 3. MODERATELY IMPORTANT
- ☐ 4. SLIGHTLY IMPORTANT
- ☐ 5. NOT IMPORTANT
- ☐ 6. NO OPINION

8. How well did your college education prepare you for your career in terms of human dimensions education/training?

- ☐ 1. MORE THAN ADEQUATE TRAINING IN HUMAN DIMENSIONS
- ☐ 2. ADEQUATE TRAINING IN HUMAN DIMENSIONS
- ☐ 3. LESS THAN ADEQUATE TRAINING IN HUMAN DIMENSIONS

9. Do you feel you need additional education/training in human dimensions for:

A. THE WORK YOU NOW DO?

- ☐ 1. NO
- ☐ 2. YES
- ☐ 3. NO OPINION

B. THE WORK YOU HOPE TO DO IN YOUR CAREER PATH?

- ☐ 1. NO
- ☐ 2. YES
- ☐ 3. NO OPINION

If YES to either of the above questions, what type of education/training would you be interested in? Please rate each of the following types of training as:

- 1 = VERY INTERESTED
- 2 = SOMEWHAT INTERESTED
- 3 = NOT INTERESTED

- ☐ A. SPECIAL WORKSHOPS ON HUMAN DIMENSIONS
- ☐ B. OPPORTUNITY TO ATTEND A COLLEGE OR UNIVERSITY CLASS ON HUMAN DIMENSIONS
- ☐ C. A MANUAL OR TEXT ON HUMAN DIMENSIONS FOR SELF STUDY

Please list any additional suggestions or comments on the type of human dimensions education/training you would like to see available for wildlife professionals like yourself.

---

---

10. Does the work you now do require: (check ALL that apply)

- ☐ A. FREQUENT CONTACT WITH THE PUBLIC
- ☐ B. UNDERSTANDING OF PUBLICS' CONCERNS, NEEDS, OR DESIRES
- ☐ C. IMPLEMENTATION OF PROGRAMS
- ☐ D. CONDUCTING PUBLIC MEETINGS
- ☐ E. ESTABLISHING PUBLIC POLICY

11. The Bureau of Wildlife has realized a need to keep getting better at applying human dimensions knowledge in wildlife management efforts. Please rate each of the following suggestions for the Bureau of Wildlife on how to address this topic in the future. Use the 1 to 4 scale provided below to rate each suggestion.

- 1 = DO MORE
- 2 = KEEP THE SAME LEVEL OF EFFORT
- 3 = DO LESS
- 4 = DO NOT RECOMMEND AT ALL

- ☐ A. PROVIDE HUMAN DIMENSIONS EDUCATION FOR BIOLOGISTS AND MANAGERIAL STAFF (e.g., workshops, seminars, special classes)
- ☐ B. STRESS HUMAN DIMENSIONS EDUCATION IN THE HIRING OF NEW BIOLOGISTS AND MANAGERIAL STAFF (i.e., the agency should encourage the colleges and universities to train the wildlife managers)
- ☐ C. FORMALLY EVALUATE HUMAN DIMENSIONS ABILITIES/SKILLS FOR PROMOTIONS OR WORK ASSIGNMENTS
- ☐ D. HAVE TEAMS OF STAFF WITH DEVELOPED HUMAN DIMENSIONS EXPERTISE
- ☐ E. CONTRACT WITH OUTSIDE HUMAN DIMENSIONS EXPERTS TO PROVIDE INPUT ON A CASE-BY-CASE BASIS
- ☐ F. APPLY HUMAN DIMENSIONS EXPERTS ON A CONSULTANT/RETAINER BASIS

Please use this space to list any additional suggestions or comments on the directions the Bureau of Wildlife might consider to improve the level and sophistication of the Bureau's understanding and use of human dimensions information.

---

---

---

## **APPENDIX B**

**Questionnaire used to identify the opportunities for human dimensions education available to wildlife students at colleges and universities in the U.S., 1990.**

## SURVEY OF "HUMAN DIMENSIONS" IN WILDLIFE MANAGEMENT CURRICULA\*

1. Is there a Human Dimensions course in your department (a course with an entire focus on the human dimensions aspect of wildlife management)?

☐ NO  
☐ YES

If YES, please list the course number, course title, check (✓) the appropriate level and list the professor's name.

	<u>LEVEL</u>	
	Undergrad.	Grad
Number: _____	<input type="checkbox"/>	<input type="checkbox"/>
Title: _____	<input type="checkbox"/>	<input type="checkbox"/>
The Professor's name: _____		

2. Is there a Human Dimensions course available to your students in a different department (a course with an entire focus on the human dimensions aspect of wildlife management)?

☐ NO  
☐ YES  
☐ NOT SURE

If YES, please list the course number, course title, check (✓) the appropriate level and list the professor's name.

	<u>LEVEL</u>	
	Undergrad.	Grad
Number: _____	<input type="checkbox"/>	<input type="checkbox"/>
Title: _____	<input type="checkbox"/>	<input type="checkbox"/>
The Professor's name: _____		

**SKIP TO QUESTION 4 IF YOU ANSWERED "NO" OR "NOT SURE" TO BOTH QUESTIONS 1 AND 2 ABOVE.**

3. About what percent of your recent graduates (consider the last 3 years to present) with wildlife degrees (or wildlife emphasis) took a Human Dimensions course as described above? Feel free to leave blank if you are unable to give us an estimate.

☐% UNDERGRADUATES  
☐% GRADUATES

[OVER]

---

\*Research conducted by: Human Dimensions Research Unit, Department of Natural Resources,  
Cornell University, Ithaca, N.Y. 14853

4. Are Human Dimensions covered within the curriculum required of wildlife students (e.g., sociology, psychology, economics, policy, communications, etc.)?

☐ NO  
☐ YES  
☐ NOT SURE

5. Please list the wildlife management course(s) you teach.

Course Number and Title

- a. \_\_\_\_\_  
b. \_\_\_\_\_  
c. \_\_\_\_\_

6. Are Human Dimensions topics covered in any of the wildlife courses you teach?

☐ NO  
☐ YES

If YES, please list the wildlife courses you teach which include Human Dimensions topics, estimate the amount of Human Dimensions content compared to overall content and briefly describe the nature of the content.

- a. Course Title: \_\_\_\_\_  
% Human Dimensions content: \_\_\_\_\_ %  
Nature of Content: \_\_\_\_\_
- b. Course Title: \_\_\_\_\_  
% Human Dimensions content: \_\_\_\_\_ %  
Nature of Content: \_\_\_\_\_

**PLEASE SEND US A SYLLABUS OF EACH OF YOUR WILDLIFE COURSES LISTED IN QUESTION 6. IF POSSIBLE, PLEASE CIRCLE ON YOUR COURSE SYLLABUS THE TOPICS WHICH INCLUDE HUMAN DIMENSIONS CONTENT.**

**ENCLOSE YOUR SYLLABUS WITH THIS QUESTIONNAIRE AND RETURN TO US IN THE ADDRESSED, STAMPED RETURN ENVELOPE WE PROVIDED.**

☐ *Check here if you want a copy of our findings from this survey; include a business card or piece of paper with your name and address in the return envelope.*

## **APPENDIX C.**

Selected comments by NYSDEC Bureau of Wildlife staff on a questionnaire to identify their human dimensions training level and perceived training needs, 1990.

### **ANALYSIS OF RESPONSES TO:**

**Please list any additional suggestions or comments on the type of human dimensions education/training you would like to see available for wildlife professionals like yourself.**

A number of comments stressed the importance of additional education/training in human dimensions to BOW staff. For example:

"Should be required for all BOW staff."

"This type of training should be offered periodically on a regular basis."

"Essential to implement programs at all levels in Bureau staff."

"I think that all Bureau staff (i.e., wildlife professionals) should have this as part of their background/basic training. I also strongly believe the Bureau should have its own Human Dimensions Applications Unit."

"Just that such training should be available to the working person, and should be ongoing. e.g., refresher courses available."

"This training would be good for new people with no experience or prior training."

"This should be a part of the education of a wildlife manager but not replace wildlife management."

However, one person felt that education efforts should be directed in other areas. He/she commented that, "There are many other fields of study that should be pursued first."

Most comments dealt with the type of education/training that BOW staff needed. Some suggestions were:

"Dealing with the media: how to receive fair and honest coverage, when to say no, etc."

"Statewide staff seminar on philosophy, goals, objectives of Bureau of Wildlife."

"A bibliography on human dimensions might be useful."



"Workshop/seminars geared specifically to wildlife professionals."

"Present human dimensions and how they are changing as they relate to demographic characteristics."

"How to deal with conflicting public interests in natural resource (wildlife) issues."

"Interpreting responses from the silent majority."

"Socioeconomic and political aspects of government (as it relates to wildlife management)."

"Maybe some basic psychology to better understand and interpret people's needs."

"Applied seminars to specific problems faced by Bureau staff, e.g., communication/networking."

"Human dimensions and managerial skills."

"Communications--public relations; sociology; psychology; recreation; role of government, agencies, and employees."

"Training in best methods to use to evaluate human responses to management activities--both before and after implementation of activities."

"I need instruction in conflict resolution and techniques for obtaining and using meaningful public input."

"(1) More liberal arts education; (2) Greater infusion of non-wildlife biology ideas."

This long list clearly demonstrates that a single workshop/seminar will not adequately satisfy the human dimensions education/training needs of BOW staff. The Bureau may want to consider developing a series of workshops/seminars each with different specialized focus, probably on a continuing basis to meet new staff needs.

## **ANALYSIS OF RESPONSES TO:**

**Please list any additional suggestions or comments on the directions the Bureau of Wildlife might consider to improve the level and sophistication of the Bureau's understanding and use of human dimensions information.**

A number of comments arose relating to the accidental omission of human dimensions training for technicians from the response categories. For example: "Fish & Wildlife technicians should be included in this type of training. There are many technicians who deal with the public one-on-one and have to apply and promote Dept. policy." Some comments dealt with the importance of human dimensions training, for example:

"The Bureau should consider staff development a very high priority and human dimensions training as part of that development, as among its absolute highest priorities."

"This area should be put in perspective so that the staff is capable of utilizing the information developed. This is not an end unto itself but only one more tool for doing effective wildlife management. Staff must have the capacity to absorb the information that is generated and then put it to use."

"The Bureau has an excellent working relationship with Cornell's Human Dimensions Research Group. It needs to enhance its inhouse efforts to insure that collected data is applied in their programs."

Many comments dealt with more specific recommendations, listed below:

"The agency should encourage colleges to train wildlifers in human dimensions but do not expect it to happen soon and do not hold it against people when hiring new employees."

"Improve the Bureau's infrastructure reward system to recognize increased job complexity including the human dimensions aspect, and especially years of service at a satisfactory level, i.e., job satisfaction within the Bureau will provide incentive for employees to gain expertise in human dimensions."

"Important to the implementation of any program of this type is strong support from Central office and managerial staff. Inertia in staff is main obstacle."

"Future research should be based on needed objectives. Time management workshops."

"Use consultants to present workshops on human dimensions in isolated settings; short communications (i.e., Bureau newsletter) on what human dimensions is and its various impacts."

"Sit down with a variety of field people to see what we really do need."

"The Bureau needs to do a better job of evaluating public concerns and stop identifying individuals and groups that disagree with programs and/or program implementation as those that need to be educated. Flexibility in the various management systems need to be formally built in and wildlife staff must accept it."

"May be able to benefit from direction and encouragement to keep up with human dimensions work: i.e., recommended reading list from staff, with notes on how it applies to our work - plus staff workshops on relevant topics."

"We definitely need to better understand the public's needs regarding wildlife and wildlife management. However, we must be prepared to provide professional leadership to avoid management by opinion poll."

The BOW administration should view this survey as an opportunity to open new lines of communication with staff by using these survey results to stimulate further discussions on staff suggestions.